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DEPARTMENT OF ENERGY

Gulf Coast LNG Export, LLC	[FE Docket No. 12-05-LNG]
Jordan Cove Energy Project, L.P.	[FE Docket No. 12-32-LNG]
Gulf LNG Liquefaction Company, LLC	[FE Docket No. 12-101-LNG]
CE FLNG, LLC	[FE Docket No. 12-123-LNG]
Freeport-McMoRan Energy LLC	[FE Docket No. 13-26-LNG]
Venture Global Calcasieu Pass, LLC	[FE Docket No. 13-69-LNG]
Eos LNG LLC	[FE Docket No. 13-116-LNG]
Barca LNG LLC	[FE Docket No. 13-118-LNG]
Waller LNG Services, LLC	[FE Docket No. 13-153-LNG]
Gasfin Development USA, LLC	[FE Docket No. 13-161-LNG]
Venture Global Calcasieu Pass, LLC	[FE Docket No. 14-88-LNG]
SCT&E LNG, LLC	[FE Docket No. 14-98-LNG]
Venture Global Calcasieu Pass, LLC	[FE Docket No. 15-25-LNG]
G2 LNG LLC	[FE Docket No. 15-45-LNG]
Texas LNG Brownsville LLC	[FE Docket No. 15-62-LNG]
Strom Inc.	[FE Docket No. 15-78-LNG]
Port Arthur LNG, LLC	[FE Docket No. 15-96-LNG]
Corpus Christi Liquefaction, LLC	[FE Docket No. 15-97-LNG]
Rio Grande LNG, LLC	[FE Docket No. 15-190-LNG]
Eagle LNG Partners Jacksonville, LLC	[FE Docket No. 16-15-LNG]
Venture Global Plaquemines LNG, LLC	[FE Docket No. 16-28-LNG]
Driftwood LNG, LLC	[FE Docket No. 16-144-LNG]
Fourchon LNG, LLC	[FE Docket No. 17-105-LNG]
Galveston Bay LNG, LLC	[FE Docket No. 17-167-LNG]
Freeport LNG Expansion L.P., and FLNG Liquefaction 4, LLC	[FE Docket No. 18-26-LNG]

Study on Macroeconomic Outcomes of LNG Exports

AGENCY: Office of Fossil Energy, Department of Energy.

ACTION: Notice of availability of the 2018 LNG Export Study and request for comments.

SUMMARY: The Office of Fossil Energy (FE) of the Department of Energy (DOE) gives notice (Notice) of the availability of a study, *Macroeconomic Outcomes of Market Determined Levels of U.S. LNG Exports* (2018 LNG Export Study or Study), in the above-referenced proceedings and invites the submission of comments on the Study. DOE commissioned the 2018

LNG Export Study to inform DOE/FE's decisions on applications seeking authorization to export domestically produced liquefied natural gas (LNG) from the lower-48 states to countries with which the United States does not have a free trade agreement (FTA) requiring national treatment for trade in natural gas, and with which trade is not prohibited by U.S. law or policy (non-FTA countries). The purpose of this Notice is to enter the 2018 LNG Export Study into the administrative record of the 25 pending non-FTA export proceedings (listed above) and to invite comments on the Study for use in the pending and future non-FTA application proceedings. The 2018 LNG Export Study is posted on the DOE/FE website at:

<https://fossil.energy.gov/app/docketindex/docket/index/10>.

DATES: Comments are to be filed using procedures detailed in the **Public Comment Procedures** section no later than 4:30 p.m., Eastern time, **[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. DOE will not accept reply comments.

ADDRESSES:

Electronic Filing of Comments Using Online Form:

<https://fossil.energy.gov/app/docketindex/docket/index/10>

Regular Mail

U.S. Department of Energy (FE-34)
Office of Regulation and International Engagement
Office of Fossil Energy
P.O. Box 44375
Washington, DC 20026-4375

Hand Delivery or Private Delivery Services (e.g., FedEx, UPS, etc.)

U.S. Department of Energy (FE-34)
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Office of Fossil Energy
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SUPPLEMENTARY INFORMATION:

I. Background

A. Statutory and Regulatory Overview

Pursuant to section 3 of the Natural Gas Act (NGA), 15 U.S.C. 717b, exports of natural gas, including LNG, must be authorized by DOE/FE.¹ Under NGA section 3(a), 15 U.S.C. 717b(a), applications that seek authority to export natural gas to non-FTA countries are presumed to be in the public interest unless, after opportunity for hearing, DOE finds that the authorization would not be consistent with the public interest.²

In evaluating the public interest under NGA section 3(a), DOE reviews factors including economic impacts, international impacts, security of natural gas supply, and environmental impacts, among others.³ Additionally, DOE/FE has explained that, in deciding whether to grant a non-FTA export application, it considers the cumulative impacts of the total volume of all final non-FTA export authorizations.⁴ DOE/FE has further stated that it will assess the cumulative impacts of each succeeding request for export authorization on the public interest with due regard to the effect on domestic natural gas supply and demand fundamentals.⁵

¹ The authority to regulate the imports and exports of natural gas, including LNG, under section 3 of the NGA (15 U.S.C. 717b) has been delegated to the Assistant Secretary for FE in Redelegation Order No. 00-006.02 (issued November 17, 2014).

² With regard to exports to FTA countries, NGA section 3(c) was amended by section 201 of the Energy Policy Act of 1992 (Pub. L. 102-486) to require that FTA applications “shall be deemed to be consistent with the public interest” and granted “without modification or delay.” 15 U.S.C. 717b(c). Accordingly, this Notice does not apply to FTA export proceedings.

³ See generally *Sierra Club v. U.S. Dep’t of Energy*, 867 F.3d 189 (D.C. Cir. 2017). Before reaching a final decision on any non-FTA application, DOE must also comply with the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321 *et seq.*

⁴ See, e.g., *Eagle LNG Partners Jacksonville II LLC*, DOE/FE Order No. 4078, FE Docket No. 17-79-LNG, Opinion and Order Granting Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas in ISO Containers Loaded at the Eagle Maxville Facility in Jacksonville, Florida, and Exported by Vessel to Free Trade Agreement and Non-Free Trade Agreement Nations, 34-38 (Sept. 15, 2017).

⁵ See *id.* at 37-38.

To date, DOE/FE has issued 29 final long-term authorizations to export LNG and compressed natural gas to non-FTA countries in a cumulative volume totaling 21.35 billion cubic feet (Bcf) per day (Bcf/d) of natural gas (approximately 7.79 trillion cubic feet per year).⁶ With one early exception,⁷ DOE/FE issued all of these authorizations based, in part, on its consideration of one or more of the LNG export studies described below.

B. LNG Export Studies

To date, DOE/FE has commissioned five studies to examine the effects of U.S. LNG exports on the U.S. economy and energy markets.⁸ The first study, *Effect of Increased Natural Gas Exports on Domestic Energy Markets*, was performed by EIA and published in January 2012 (EIA Study).⁹ The second study, *Macroeconomic Impacts of LNG Exports from the United States*, was performed by NERA and published in December 2012 (NERA Study and, together with the EIA Study, the 2012 LNG Export Study).¹⁰ The third study, *Effect of Increased Levels of Liquefied Natural Gas Exports on U.S. Energy Markets*, was performed by EIA and published in October 2014 (2014 LNG Export Study).¹¹ The fourth study, *The Macroeconomic Impact of Increasing U.S. LNG Exports*, was performed jointly by the Center for Energy Studies at Rice University's Baker Institute and Oxford Economics and published in October 2015 (2015 LNG

⁶ See *id.* at 34-38.

⁷ DOE acted on the first application—Sabine Pass Liquefaction, LLC in FE Docket No. 10-111-LNG—at approximately the same time that DOE/FE commenced the first LNG export study.

⁸ Because there is no natural gas pipeline interconnection between Alaska and the lower 48 states, DOE/FE generally views those LNG export markets as distinct. DOE/FE therefore focuses on LNG exports from the lower-48 states for purposes of determining macroeconomic impacts.

⁹ See 2012 LNG Export Study, 77 FR. 73627 (Dec. 11, 2012), *available at*: http://energy.gov/sites/prod/files/2013/04/f0/fr_notice_two_part_study.pdf (notice of availability of the 2012 LNG Export Study).

¹⁰ See *id.*

¹¹ U.S. Energy Info. Admin., *Effect of Increased Levels of Liquefied Natural Gas Exports on U.S. Energy Markets* (Oct. 2014), *available at*: <https://www.eia.gov/analysis/requests/fe/pdf/lng.pdf>.

Export Study).¹² The study subject to this Notice—the 2018 LNG Export Study—is the fifth economic study commissioned by DOE.

DOE/FE invited public comment on each of the four prior studies, and received comments representing a diverse range of interests and perspectives. DOE/FE considered the comments received on each study, as applicable, in its review of the non-FTA export applications then-pending before it. As noted above, DOE/FE has relied on these studies to better inform its public interest review under section 3(a) of the NGA.

The two most recent studies, the 2014 and 2015 LNG Export Studies, examined the domestic macroeconomic impacts of increasing exports of LNG at levels from 12 to 20 Bcf/d of natural gas. Specifically, the 2014 LNG Export Study served as an update of EIA’s 2012 Study and used baseline cases from EIA’s *Annual Energy Outlook 2014*. Whereas the 2012 study was based off of a Reference case with no LNG exports, the 2014 study assumed higher LNG exports as it was based off of 9.4 Bcf/d Reference case export levels.¹³ The 2015 Study was a scenario-based assessment of the macroeconomic impact of levels of U.S. LNG exports, sourced from the lower-48 states, under different assumptions including U.S. resource endowment, U.S. natural gas demand, and international LNG market dynamics. The 2015 LNG Export Study included a case examining export volumes up to 28 Bcf/d of natural gas. The analysis covered the 2015 to 2040 time period.

C. The 2018 LNG Export Study

¹² Center for Energy Studies at Rice University Baker Institute and Oxford Economics, *The Macroeconomic Impact of Increasing U.S. LNG Exports* (Oct. 29, 2015), available at: http://energy.gov/sites/prod/files/2015/12/f27/20151113_macro_impact_of_lng_exports_0.pdf; see also U.S. Dep’t of Energy, *Macroeconomic Impacts of LNG Exports Studies*; Notice of Availability and Request for Comments, 80 F R 81300 (Dec. 29, 2015) (notice of availability of the 2014 and 2015 LNG Export Studies).

¹³ Each Annual Energy Outlook (AEO) presents EIA’s long-term projections of energy supply, demand, and prices. It is based on results from EIA’s National Energy Modeling System (NEMS) model.

The 2018 LNG Export Study, performed by NERA Economic Consulting (NERA), examines the probability and macroeconomic impact of various U.S. LNG export scenarios and includes alternative baseline scenarios based on the U.S. Energy Information Administration's (EIA) *Annual Energy Outlook 2017*. The 2018 LNG Export Study will allow DOE/FE to: (i) evaluate the cumulative impacts of each additional non-FTA application to export LNG on the U.S. economy and energy markets, and (ii) assess the likelihood (or probability) of different levels of LNG exports. The 2018 LNG Export Study is posted on the DOE/FE website at: <https://www.energy.gov/app/docketindex/docket/index/10>. DOE may use the 2018 LNG Export Study to inform its decisions in the pending non-FTA docket proceedings (listed above), in future non-FTA application proceedings, and for other purposes. Comments submitted in compliance with the instructions in this Notice will be placed in the administrative record for all of the above-listed proceedings and need only be submitted once.

The 25 proceedings identified above involve pending applications seeking authorization to export domestically produced LNG to non-FTA countries. In light of both the cumulative volume of exports to non-FTA countries authorized to date (equivalent to 21.35 Bcf/d of natural gas) and the volume of LNG requested for export in those pending applications, DOE/FE determined that a new macroeconomic study was warranted. DOE therefore commissioned NERA to conduct the 2018 LNG Export Study.

Like the four prior studies, the 2018 LNG Export Study examines the impacts of varying levels of LNG exports on domestic energy markets. The 2018 LNG Export Study also assesses the likelihood of different levels of "unconstrained" LNG exports (defined as market determined levels of exports), and analyzes the outcomes of different LNG export levels on the U.S. natural gas markets and the U.S. economy as a whole, over the 2020 to 2050 time period.

Specifically, the 2018 LNG Export Study develops 54 scenarios by identifying various assumptions for domestic and international supply and demand conditions to capture a wide range of uncertainty in the natural gas markets.¹⁴ The scenarios include three baseline cases based on EIA’s *Annual Energy Outlook 2017* (AEO 2017) projections (the most recent EIA projections available at the time), with varying assumptions about U.S. natural gas supply. Alternative scenarios add other assumptions about both future U.S. natural gas demand and the international outlook. International assumptions are based on EIA’s *International Energy Outlook 2017* and the International Energy Agency’s *World Energy Outlook 2016*.

As part of this analysis, the 2018 LNG Export Study examines the likelihood of conditions leading to various export scenarios—making it the first DOE macroeconomic study to consider this issue. Specifically, the 2018 LNG Export Study includes peer-reviewed probabilities of uncertainties surrounding developments in the international and domestic natural gas markets that were, in turn, combined to develop the 54 export scenarios and their associated macroeconomic impacts.

To summarize, the 2018 LNG Export Study differs from DOE/FE’s previous macroeconomic studies in the following ways:

- (i) Includes a larger number of scenarios (54 scenarios) to capture a wider range of uncertainty in four natural gas market conditions than examined in the previous studies;
- (ii) Includes LNG exports in all 54 scenarios that are market-determined levels, including the three alternative baseline scenarios that are based on the AEO 2017 projections;
- (iii) Examines unconstrained LNG export volumes beyond the levels examined in the previous studies;

¹⁴ The four major sources of uncertainty affecting U.S. LNG exports identified by the Study are: natural gas supply conditions in the United States, natural gas demand in the United States, natural gas supply availability in the rest of the world, and natural gas demand in the rest of the world.

- (iv) Examines the likelihood of those market-determined LNG export volumes; and
- (v) Provides macroeconomic projections associated with several of the scenarios lying within the more likely range.

II. Invitation to Comment

The 2018 LNG Export Study and the comments that DOE/FE receives in response to this Notice will help to inform DOE/FE's determination of the public interest in pending and future non-FTA application proceedings. Comments must be limited to the methodology, results, and conclusions of the 2018 LNG Export Study on the factors evaluated. These factors include the potential impact of LNG exports on domestic energy consumption, production, and prices; the macroeconomic factors identified in the Study, including gross domestic product, consumption, U.S. economic sector analysis, and U.S. LNG export feasibility analysis; and any other factors included in the Study. In addition, comments may be directed toward the feasibility of various scenarios used in the Study. While this invitation to comment covers a broad range of issues, DOE may disregard comments that are not germane to the present inquiry. Due to the complexity of the issues raised in the 2018 LNG Export Study, interested parties will be provided 45 days from the date of publication of this Notice in which to submit their comments.

III. Public Comment Procedures

DOE is not establishing a new proceeding or docket in this Notice, and the submission of comments in response to this Notice will not make commenters parties to any of the 25 export proceedings identified by docket number above. Persons with an interest in the outcome of one or more of those proceedings have been given an opportunity to comment, protest, and/or intervene in those applications by complying with the procedures established in the respective

notices of application published in the *Federal Register*.¹⁵ The record in those 25 proceedings will include all comments received in response to this Notice. Comments will be reviewed on a consolidated basis, and decisions on each application will be issued on a case-by-case basis. In addition to the procedures established by this Notice, all comments must meet the requirements specified by the regulations in 10 CFR part 590, as supplemented below.

Comments may be submitted using one of the following supplemental methods:

(1) Submitting the comments using the online form at

<https://fossil.energy.gov/app/docketindex/docket/index/10>;

(2) Mailing an original and three paper copies of the filing to the Office of Regulation and International Engagement at the address listed in **ADDRESSES**; or

(3) Hand delivering an original and three paper copies of the filing to the Office of Regulation and International Engagement at the address listed in **ADDRESSES**.

¹⁵ Notices of application in the 25 proceedings were published in the *Federal Register* as follows: *Gulf Coast LNG Export, LLC*, FE Docket No. 12-05-LNG, 77 FR 32962 (June 4, 2012); *Jordan Cove Energy Project, L.P.*, FE Docket No. 12-32-LNG, 77 FR 33446 (June 6, 2012); *Gulf LNG Liquefaction Co., LLC*, FE Docket No. 12-101-LNG, 77 FR 66454 (Nov. 5, 2012); *CE FLNG, LLC*, FE Docket No. 12-123-LNG, 77 FR 72840 (Dec. 6, 2012); *Freeport-McMoRan Energy LLC*, FE Docket No. 13-26-LNG, 78 FR 34084 (June 6, 2013); *Venture Global Calcasieu Pass, LLC*, FE Docket No. 13-69-LNG, 79 FR 30109 (May 27, 2014); *Eos LNG LLC*, FE Docket No. 13-116-LNG, 78 FR 75337 (Dec. 11, 2013); *Barca LNG LLC*, FE Docket No. 13-118-LNG, 78 FR 75339 (Dec. 11, 2013); *Waller LNG Svs., LLC*, FE Docket No. 13-153-LNG, 79 FR 41685 (July 17, 2014); *Gasfin Development USA, LLC*, FE Docket No. 13-161-LNG, 79 FR 44439 (July 31, 2014); *Venture Global Calcasieu Pass, LLC*, FE Docket No. 14-88-LNG, 79 FR 66707 (Nov. 10, 2014); *SCT&E LNG, LLC*, FE Docket No. 14-98-LNG, 79 FR 75796 (Dec. 19, 2014); *Venture Global Calcasieu Pass, LLC*, FE Docket No. 15-25-LNG, 80 FR 36977 (June 29, 2015); *G2 LNG LLC*, FE Docket No. 15-45-LNG, 80 FR 44091 (July 24, 2015); *Texas LNG Brownsville LLC*, FE Docket No. 15-62-LNG, 80 FR 46966 (Aug. 6, 2015); *Strom Inc.*, FE Docket No. 15-78-LNG, 80 FR 51793 (Aug. 26, 2015); *Port Arthur LNG, LLC*, FE Docket No. 15-96-LNG, 80 FR 51795 (Aug. 26, 2015); *Corpus Christi Liquefaction, LLC*, FE Docket No. 15-97-LNG, 80 FR 51790 (Aug. 26, 2015); *Rio Grande LNG, LLC*, FE Docket No. 15-190-LNG, 81 FR 46318 (July 19, 2016); *Eagle LNG Partners Jacksonville, LLC*, FE Docket No. 16-15-LNG, 81 FR 43192 (July 1, 2016); *Venture Global Plaquemines LNG, LLC*, FE Docket No. 16-28-LNG, 81 FR 39603 (June 8, 2016); *Driftwood LNG, LLC*, FE Docket No. 16-144-LNG, 82 FR 3760 (Jan. 12, 2017); *Fourchon LNG, LLC*, FE Docket No. 17-105-LNG, 82 FR 49201 (Oct. 24, 2017); *Galveston Bay LNG, LLC*, FE Docket No. 17-167-LNG, 83 FR 4473 (Jan. 31, 2018); *Freeport LNG Expansion, L.P. and FLNG Liquefaction 4, LLC*, FE Docket No. 18-26-LNG, 83 FR 23909, (May 23, 2018).

For administrative efficiency, DOE/FE prefers comments to be filed electronically using the online form (method 1). All comments must include a reference to the “2018 LNG Export Study” in the title line.

The 2018 LNG Export Study is available for inspection and copying in the Division of Natural Gas Regulation docket room, Room 3E-042, 1000 Independence Avenue, SW., Washington, DC 20585. The docket room is open between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. The Study and any comments filed in response to this Notice will be available electronically at the following DOE/FE website: <https://fossil.energy.gov/app/docketindex/docket/index/10>.

Issued in Washington, D.C., on June 7, 2018.

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